

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Claim 1. (Currently Amended) A synthetic nucleic acid molecule comprising a sequence of nucleotides that encodes a rhesus monkey carcinoembryonic antigen (CEA) protein as set forth in SEQ ID NO:2 or SEQ ID NO:3, the synthetic nucleic acid molecule being codon-optimized for high level expression in a human cell.

Claims 2-5. (Canceled)

Claim 6. (Currently Amended) The synthetic nucleic acid molecule of claim 2 wherein the sequence of nucleotides comprises the sequence of nucleotides set forth in SEQ ID NO:1.

Claim 7. (Original) A vector comprising the nucleic acid molecule of claim 1.

Claim 8. (Original) A host cell comprising the vector of claim 7.

Claim 9. (Original) A process for expressing a rhesus monkey carcinoembryonic antigen (CEA) protein in a recombinant host cell, comprising:

- (a) introducing a vector comprising the nucleic acid of claim 1 into a suitable host cell; and,
- (b) culturing the host cell under conditions which allow expression of said rhesus monkey CEA protein.

Claim 10. (Currently Amended) A method of preventing or treating cancer comprising administering to a ~~mammal~~ human a vaccine vector comprising a the synthetic codon-optimized nucleic acid molecule of claim 1, ~~the nucleic acid molecule comprising a~~

~~sequence of nucleotides that encodes a rhesus monkey carcinoembryonic antigen (rhCEA) protein as set forth in SEQ ID NO:2 or SEQ ID NO:3.~~

Claim 11. (Canceled)

Claim 12. (Original) A method according to claim 10 wherein the vector is an adenovirus vector or a plasmid vector.

Claims 13-14. (Canceled)

Claim 15. (Currently Amended) An adenovirus vaccine vector comprising an adenoviral genome with a deletion in the E1 region, and an insert in the E1 region, wherein the insert comprises an expression cassette comprising:

- (a) ~~a codon-optimized~~ polynucleotide encoding a rhesus monkey carcinoembryonic antigen (CEA) protein as set forth in SEQ ID NO:2 or SEQ ID NO:3, the polynucleotide being codon-optimized for high-level expression in a human cell; and
- (b) a promoter operably linked to the polynucleotide.

Claim 16. (Currently Amended) An adenovirus vector according to claim 15 ~~which is an Ad 5 vector~~ wherein the adenoviral genome is selected from the group consisting of: Ad5, Ad6, and Ad24.

Claims 17-18. (Canceled)

Claim 19. (Currently Amended) A vaccine plasmid comprising a plasmid portion and an expression cassette portion, the expression cassette portion comprising:

- (a) ~~a codon-optimized~~ polynucleotide encoding a rhesus monkey carcinoembryonic antigen (CEA) protein as set forth in SEQ ID NO:2 or SEQ ID NO:3, the polynucleotide being codon-optimized for high-level expression in a human cell; and
- (b) a promoter operably linked to the polynucleotide.

Claim 20. (Original) A method of protecting a mammal from cancer comprising:

- (a) introducing into the mammal a first vector comprising:
 - (i) a codon-optimized polynucleotide encoding a rhesus monkey carcinoembryonic antigen (CEA) protein; and
 - (ii) a promoter operably linked to the polynucleotide;
- (b) allowing a predetermined amount of time to pass; and
- (c) introducing into the mammal a second vector comprising:
 - (i) a codon-optimized polynucleotide encoding a rhesus monkey CEA protein; and
 - (ii) a promoter operably linked to the polynucleotide.

Claim 21. (Original) A method according to claim 20 wherein the first vector is a plasmid and the second vector is an adenovirus vector.

Claim 22. (Original) A method according to claim 20 wherein the first vector is an adenovirus vector and the second vector is a plasmid.

Claims 23-29. (Canceled)